NEW PRODUCT

DIODES
INCORPORATED

Lead-free Green

2DB1714

LOW $V_{CE(SAT)}$ PNP SURFACE MOUNT TRANSISTOR

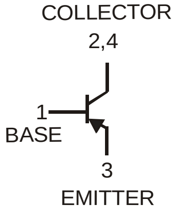
Features

- Epitaxial Planar Die Construction
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- Complementary NPN Type (2DD2679) Available
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**

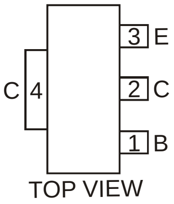
Mechanical Data

- Case: SOT89-3L
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Finish — Matte Tin annealed over Copper leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.072 grams (approximate)

Top View



Device Schematic



Pin Out Configuration

Maximum Ratings @T_A = 25℃ unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-30	V
Collector-Emitter Voltage	V_{CEO}	-30	V
Emitter-Base Voltage	V_{EBO}	-6	V
Peak Pulse Current	I_{CM}	-4	A
Continuous Collector Current	I_C	-2	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 3) @ T_A = 25℃	P_D	0.9	W
Thermal Resistance, Junction to Ambient Air (Note 3) @ T_A = 25℃	$R_{\theta JA}$	139	℃/W
Power Dissipation (Note 4) @ T_A = 25℃	P_D	2	W
Thermal Resistance, Junction to Ambient Air (Note 4) @ T_A = 25℃	$R_{\theta JA}$	62.5	℃/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	℃

Electrical Characteristics @T_A = 25℃ unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Conditions
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-30	—	—	V	$I_C = -10\mu A, I_E = 0$
Collector-Emitter Breakdown Voltage (Note 5)	$V_{(BR)CEO}$	-30	—	—	V	$I_C = -1mA, I_B = 0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-6	—	—	V	$I_E = -10\mu A, I_C = 0$
Collector Cut-Off Current	I_{CBO}	—	—	-0.1	μA	$V_{CB} = -30V, I_E = 0$
Emitter Cut-Off Current	I_{EBO}	—	—	-0.1	μA	$V_{EB} = -6V, I_C = 0$
ON CHARACTERISTICS (Note 5)						
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	—	-370	mV	$I_C = -1.5A, I_B = -75mA$
DC Current Gain	h_{FE}	270	—	680	—	$V_{CE} = -2V, I_C = -200mA$
SMALL SIGNAL CHARACTERISTICS						
Output Capacitance	C_{obo}	—	16	—	pF	$V_{CB} = -10V, I_E = 0$, f = 1MHz
Current Gain-Bandwidth Product	f_T	—	200	—	MHz	$V_{CE} = -2V, I_C = -100mA$, f = 100MHz

Notes:
1. No purposefully added lead.
2. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
3. Device mounted on FR-4 PCB with minimum recommended pad layout.
4. Device mounted on FR-4 PCB with 1 inch^2 copper pad layout.
5. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤2%.

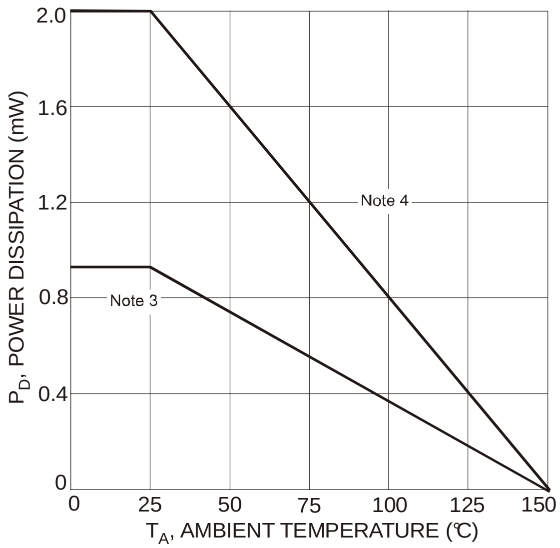


Fig. 1 Power Dissipation vs.
Ambient Temperature

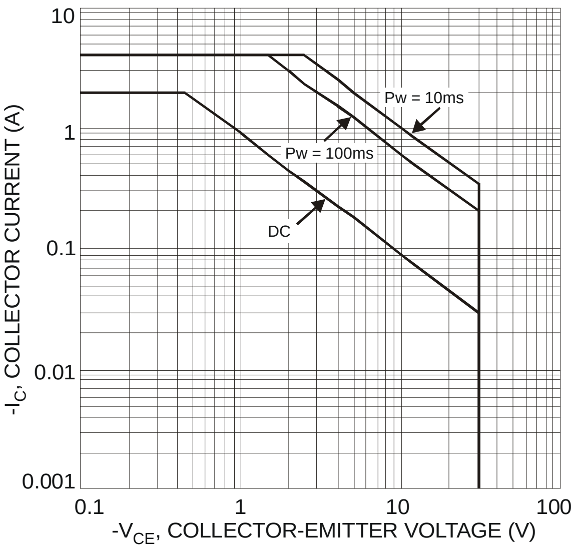


Fig. 2 Typical Collector Current
vs. Collector-Emitter Voltage (Note 3)

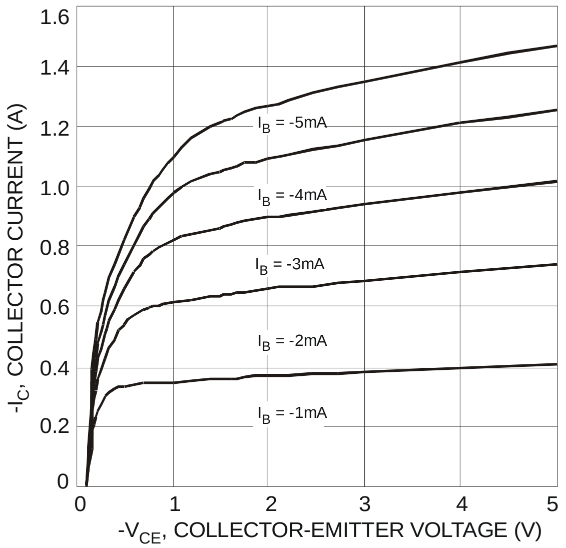


Fig. 3 Typical Collector Current
vs. Collector-Emitter Voltage

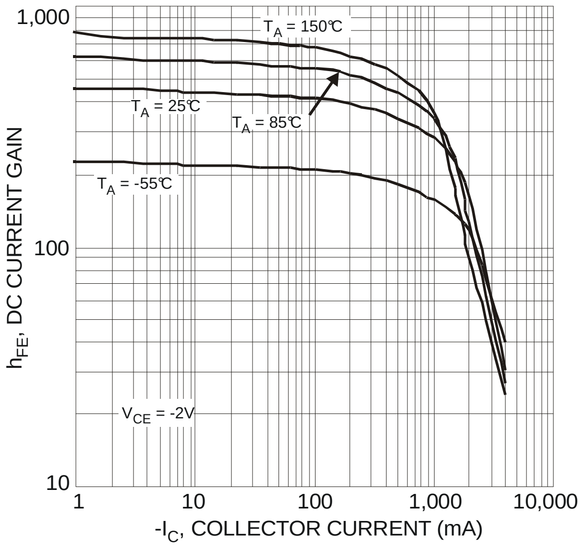


Fig. 4 Typical DC Current Gain vs. Collector Current

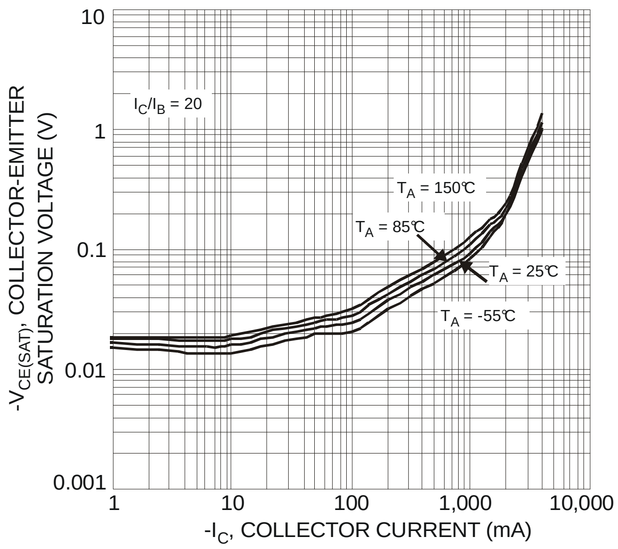


Fig. 5 Typical Collector-Emitter Saturation Voltage
vs. Collector Current

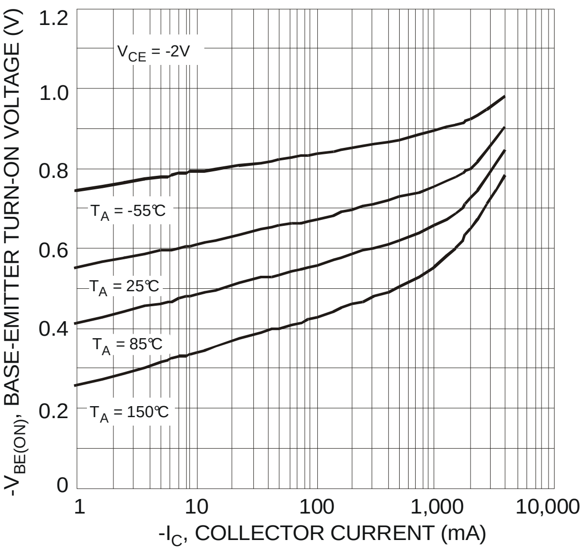


Fig. 6 Typical Base-Emitter Turn-On Voltage
vs. Collector Current

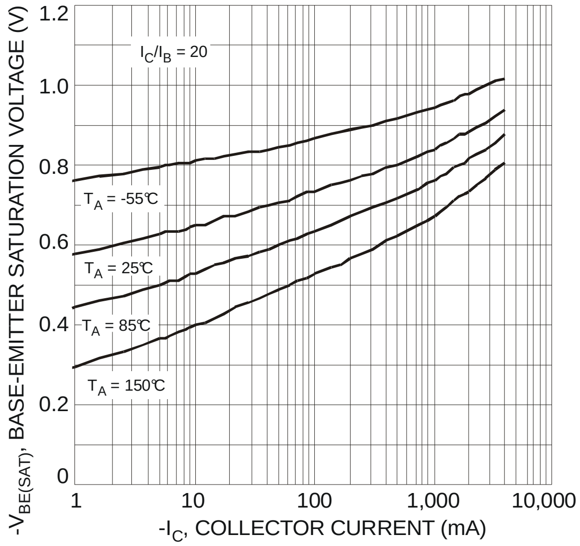


Fig. 7 Typical Base-Emitter Saturation Voltage vs. Collector Current

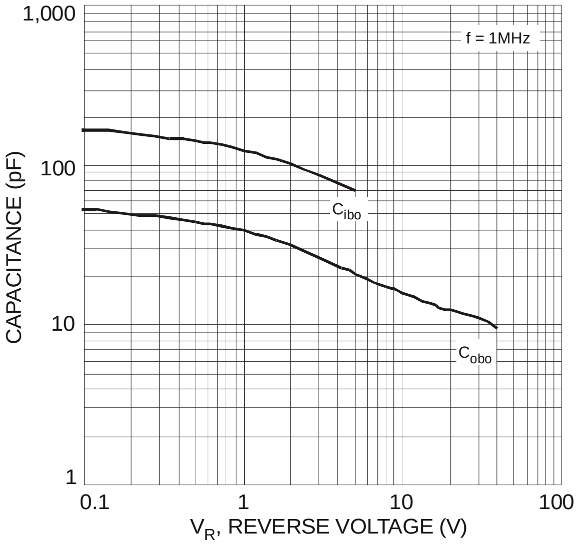


Fig. 8 Typical Capacitance Characteristics

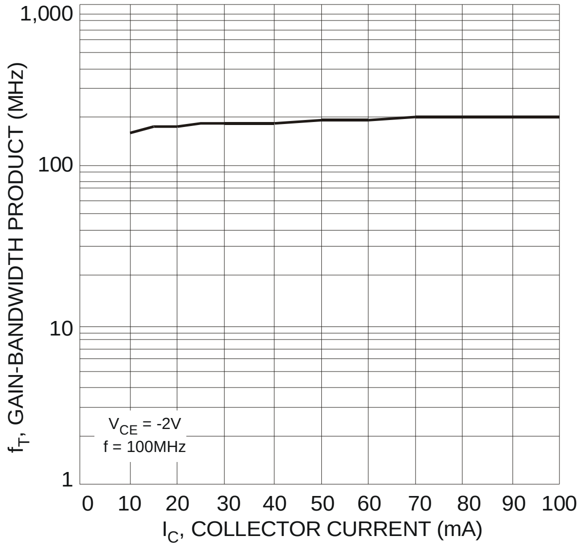


Fig. 9 Typical Gain-Bandwidth Product vs. Collector Current

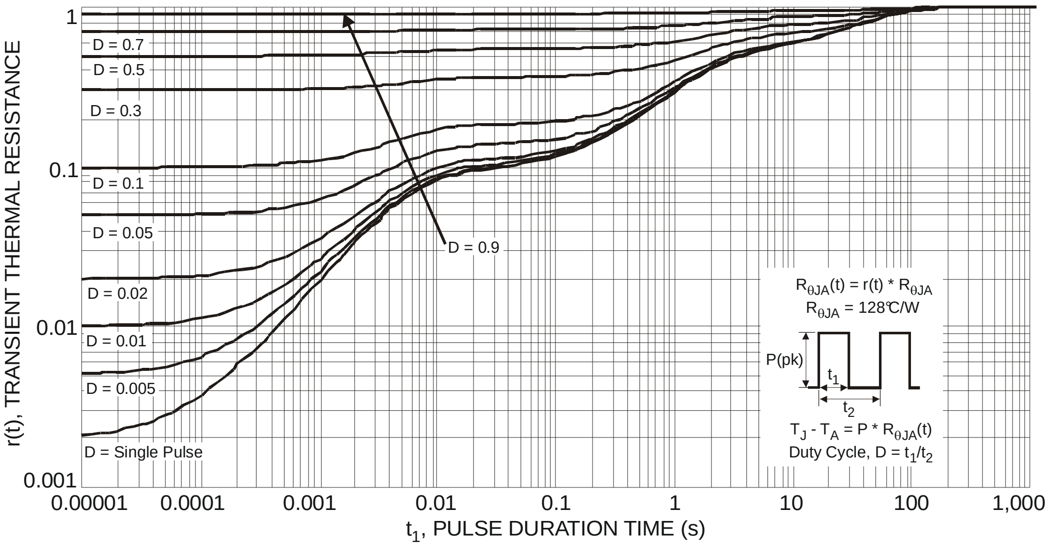


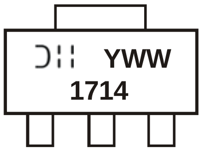
Fig. 10 Transient Thermal Response

Ordering Information (Note 6)

Part Number	Case	Packaging
2DB1714-13	SOT89-3L	2500/Tape & Reel

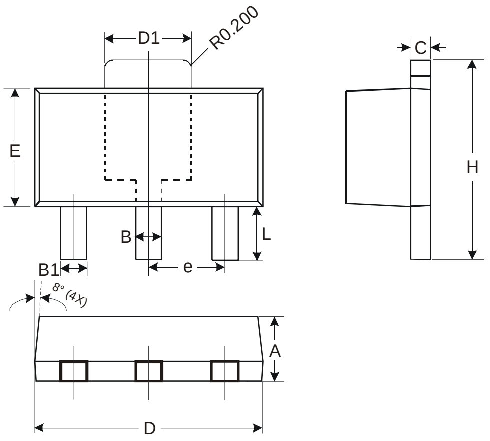
Notes: 6. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



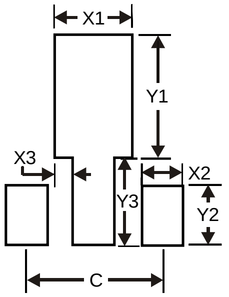
1714 = Product Type Marking Code
YWW = Date Code Marking
Y = Last digit of year (ex: 8 = 2008)
WW = Week code 01 - 52

Package Outline Dimensions



SOT89-3L			
Dim	**Min**	**Max**	**Typ**
A	1.40	1.60	1.50
B	0.45	0.55	0.50
B1	0.37	0.47	0.42
C	0.35	0.43	0.38
D	4.40	4.60	4.50
D1	1.50	1.70	1.60
E	2.40	2.60	2.50
e	—	—	1.50
H	3.95	4.25	4.10
L	0.90	1.20	1.05
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
X1	1.7
X2	0.9
X3	0.4
Y1	2.7
Y2	1.3
Y3	1.9
C	3.0